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P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
RAO, ANAND SHASHIKANT	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YONG YAN, KIRAN CHALLAPALI, and YUN-TING LIN

Appeal 2007-3361
Application 10/023,069
Technology Center 2600

Decided: March 11, 2008

Before KENNETH W. HAIRSTON, JOHN A. JEFFERY, and MARC S. HOFF, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

1Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-20. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

STATEMENT OF THE CASE

Appellants invented a system, method and program product that encodes video images. The encoded representation of the video image is split into video objects characterized by shape, motion and texture information. A video object plane (VOP) is an instance of a video object in time. The object-based coding system codes both a foreground VOP and background VOP. Because portions of the background VOP will be covered or hidden by the foreground VOP, the system has a padding arrangement that uses foreground shape information to define and pad a masked area in the background VOP. This padding scheme reduces processing overhead without sacrificing picture quality.[1]

Claim 1 is illustrative:

> 1. An object-based encoding system for encoding a video image, comprising:
>
> a foreground encoding system for generating foreground shape data and coding a foreground shape in a foreground video object plane;
>
> a padding system that pads a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape and is padded with an arbitrary value; and
>
> a background encoding system for coding the background video object plane.[2]

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[1] *See generally* Spec. 1:11-17 and 4:13-7:13.

[2] As the Examiner correctly points out, the claims in the Appendix of the Appeal Brief were not entered (Ans. 2-3). We refer to the claims submitted prior to the final rejection on November 2, 2005 throughout this opinion.

The Examiner relies on the following prior art references to show unpatentability:

Eifrig	US RE38,584 E	Aug. 10, 2004 (filed Dec. 20, 2001 (effectively filed Apr. 28, 1999))
Itokawa	US 6,404,901 B1	Jun. 11, 2002 (filed Jan. 25, 1999)

Jörn Ostermann, *Coding of Arbitrarily Shaped Objects With Binary and Greyscale Alpha-Maps: What Can MPEG Do For You?*, 5 IEEE INT'L SYMP. ON CIR. & SYS. 273 (1998).

The Examiner's rejections are as follows;

1. Claims 13-20 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.
2. Claims 1, 2, 6-8, 12-14, 18 and 19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Eifrig.
3. Claims 3, 9, 15 and 20 stand rejected under 35 U.S.C. § 103 as unpatentable over Eifrig and Itokawa.
4. Claims 4, 5, 10, 11, 16 and 17 stand rejected under 35 U.S.C. § 103 as unpatentable over Eifrig and Ostermann. [3]

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Brief[4] and the Answer[5] for their respective details. In this

[3] The rejection of claims 13 through 20 under 35 U.S.C. §112, 2nd paragraph as being indefinite presented on page 2 of the Final Rejection was not repeated in the Examiner's Answer. We assume for the record that the Examiner has withdrawn this rejection from further consideration.
[4] We refer to the Appeal Brief filed June 22, 2006 throughout this opinion.
[5] We refer to the Examiner's Answer mailed August 22, 2006 throughout this opinion.

decision, we have considered only those arguments actually made by Appellants. Arguments which Appellants could have made but did not make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

OPINION

The Non-Statutory Subject Rejection

We first consider the Examiner's rejection of claims 13 through 20 under 35 U.S.C. §101 as being directed to non-statutory subject matter. The Appellants have presented no arguments with respect to this rejection. Due to Appellants' failure to respond to the rejection, the non-statutory subject matter rejection of claims 13 through 20 is sustained pro forma.

The Anticipation Rejection

We next consider the Examiner's rejection of claims 1, 2, 6-8, 12-14, 18 and 19 under 35 U.S.C. § 102(e) as being anticipated by Eifrig. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

The Examiner has indicated how the claimed invention is deemed to be fully met by the disclosure of Eifrig (Ans. 5-6). The Examiner relies upon Figures 10-12 to show a padding system that pads a masked area in a background VOP; the masked area is determined from data associated with

the foreground shape. The Examiner also provides an example of this padding system in the Response to Argument section of the Examiner's Answer (Ans. 8-9). Referencing Figure 10, the Examiner argues that the Eifrig's padding system pads a masked area of a background VOP 1010 by using data associated with the foreground shape that is defined by the boundary areas 1020 and 1030 (Ans. 9).

Regarding the independent claims, Appellants argue that Eifrig does not disclose a padding system that pads a masked area of a background VOP that is determined from the foreground shape. In this regard, Appellants emphasize that Figure 10 of Eifrig pads the boundary area that includes part of the VOP "to increase the area of the reference image for motion estimation prior to motion compensation" (App. Br. 5, Eifrig, col. 16, ll. 25-27). Eifrig, Appellants argue, discloses a padding system that pads "on the plane of the object to increase the size of the object" and "is not applied to the background object plane in an area determined from a foreground shape." (App. Br. 5-6).

The issue before us, then, is whether the padding system of Eifrig pads a masked area in a background VOP and whether the masked area is determined from data associated with the foreground shape. For the following reasons, we find that Eifrig does not disclose these limitations.

Eifrig discloses a motion estimation and compensation apparatus for coding a VOP. Figure 1 shows a foreground VOP (117 or 118) representing a square or oblong foreground element 107 or 108, respectively, and a background VOP (119) representing the landscape element. An encoder system (137-139) codes the foreground and background VOPs based in part on shape (Eifrig, col. 5, ll. 30-62; Fig. 1).

Various padding systems are shown in Figures 10-12 of Eifrig. Specifically, Figure 10 shows a padding system that increases the size or area of a VOP for purposes of motion prediction (Eifrig, col. 16, ll. 23-33; Fig. 10). Blocks or pixels 1020 and 1030 are processed with padding depending on their location relative to the boundary of the star-shaped VOP (Eifrig, col. 16, l. 33 – col. 17, l. 20). Using this approach, the VOP 1010 is padded with blocks or pixels 1020 and 1030 "at the boundary of the VOP as well as other neighboring macroblocks" (Eifrig, col. 16, ll. 29-32).

Figures 11-12 illustrate other padding systems for predicting motion. Figure 11 shows a modified padding system used when the VOP is interlaced coded (Eifrig, col. 17, ll. 21-25; Fig. 11). This padding system uses the padding technique of Figure 10 to add or pad the exterior pixels to the VOP (Eifrig, col. 17, ll. 33-40). Figure 12 illustrates yet another padding system for predicting motion that extends the image area (Eifrig, col. 4, ll. 7-13, col. 17, l. 47 – col. 18, l. 16; Fig. 12). This embodiment combines the padding of two field blocks 1210 and 1220 to form a VOP that includes pixels exterior to the boundary of the VOP (Eifrig, col. 4, ll. 11-13, col. 18, ll. 13-16).

Based on the above findings of fact, we find that Eifrig does not disclose a padding system that pads a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape. First, there is no specific disclosure that the VOPs encoded in Figures 10-12 illustrate both a foreground and background VOP. For example, Figure 10 discloses a VOP 1010 and a frame 1000, which can be considered a VOP (Eifrig, col. 5, ll. 45-46 and col. 16, ll. 29-32; Fig. 10). Eifrig does not describe the VOP 1010 and frame 1000 as

VOPs of the foreground and background. Any assumption that VOP 1010 and frame 1000 show the foreground and background VOPs or the background and foreground VOPs would involve conjecture on our part.

Second, each of the padding systems of Eifrig discloses increasing the size of a VOP with boundary and exterior blocks or pixels in order to assist in predicting motion. There is no discussion of using these blocks to pad another VOP. Thus, even assuming that the VOP 1010 in Figure 10 is a foreground VOP and the frame 1000 is the background VOP, the disclosed padding systems do not pad a masked area of the background VOP 1000. Rather, the padding system in this assumption pads or extends an area of the foreground VOP 1010 based on the foreground shape. On the other hand, by assuming the VOP 1010 in Figure 10 is a background VOP, Eifrig does disclose a padding system that pads an area of the background VOP 1010. The area, however, is not determined from data associated with a foreground shape. As discussed above, the padding is determined from the shape of VOP 1010 or the star. Frame 1000 does not have any apparent shape in Figure 10, and there is no discussion of the shape of frame 1000 determining the padded or masked area of the assumed background VOP 1010.

Interestingly, the Examiner cites to another portion of Eifrig that does disclose changing or coding the background VOP 119,[6] while separately coding an announcer as a VOP (Eifrig, col. 6, ll. 14-21), but there is no discussion of padding an area of the background VOP 119 based on the shape of the announcer. In sum, Eifrig does not disclose a padding system

[6] Eifrig uses reference number 109 in column 6, line 14 when describing the background VOP. Since all other discussions of the background VOP use reference number 119, we find the background VOP discussed in the context of this paragraph is the background VOP 119.

that pads a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape as claimed.

For the foregoing reasons, we will not sustain the Examiner's rejection of independent claim 1, or dependent claims 2 and 6. Likewise, we will not sustain the Examiner's rejection of independent claims 7 and 13, or dependent claims 8, 12, 14, 18 and 19, which recite commensurate limitations.

The Obviousness Rejections

With regard to the obviousness rejection of claims 3, 9, 15 and 20, the Examiner adds Itokawa to Eifrig (Ans. 6-7). Since Itokawa does not cure the deficiencies noted above with respect to the independent claims, the obviousness rejection of claims 3, 9, 15 and 20 is also not sustained.

Similarly, with regard to the obviousness rejection of claims 4, 5, 10, 11, 16 and 17, the Examiner adds Ostermann to Eifrig (Ans. 7-8). Since Ostermann does not cure the deficiencies noted above with respect to the independent claims, the obviousness rejection of claims 4, 5, 10, 11, 16 and 17 is also not sustained.

DECISION

In summary, we have sustained the Examiner's non-statutory subject matter rejection of claims 13 to 20, and we have reversed the Examiner's prior art rejections with respect to all of the claims on appeal.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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P.O. BOX 3001
BRIARCLIFF MANOR NY 10510